

OPTA-PERIPH
8 Av. de
Bretteville
92 200-Neuilly
FRANCE

PURGE and PRESSURE MONITOR LCS

I - OVERVIEW

The LCS Monitor is a Purge and Pressurisation System with Automatic Leakage Compensation for protecting electrical equipment for use in hazardous or classified areas, where an explosive gas, vapour or dust is present or could be present.

The LCS Monitor complies with the latest 94/09/CE ATEX Standards for the Group II 2 G under the applicable code EEx pde IIC T6 .

Complete system has been certified by KEMA under the N° 04ATEX2016 U .

Our company quality system has been as well certified KEMA03ATEXQ3559 .

II - MAIN BENEFITS

1-CE Type examination certificate with ATEX company quality system notice
Thus the total package CE Type certification can be developed by us on customer behalf and delivered by the body certification office .

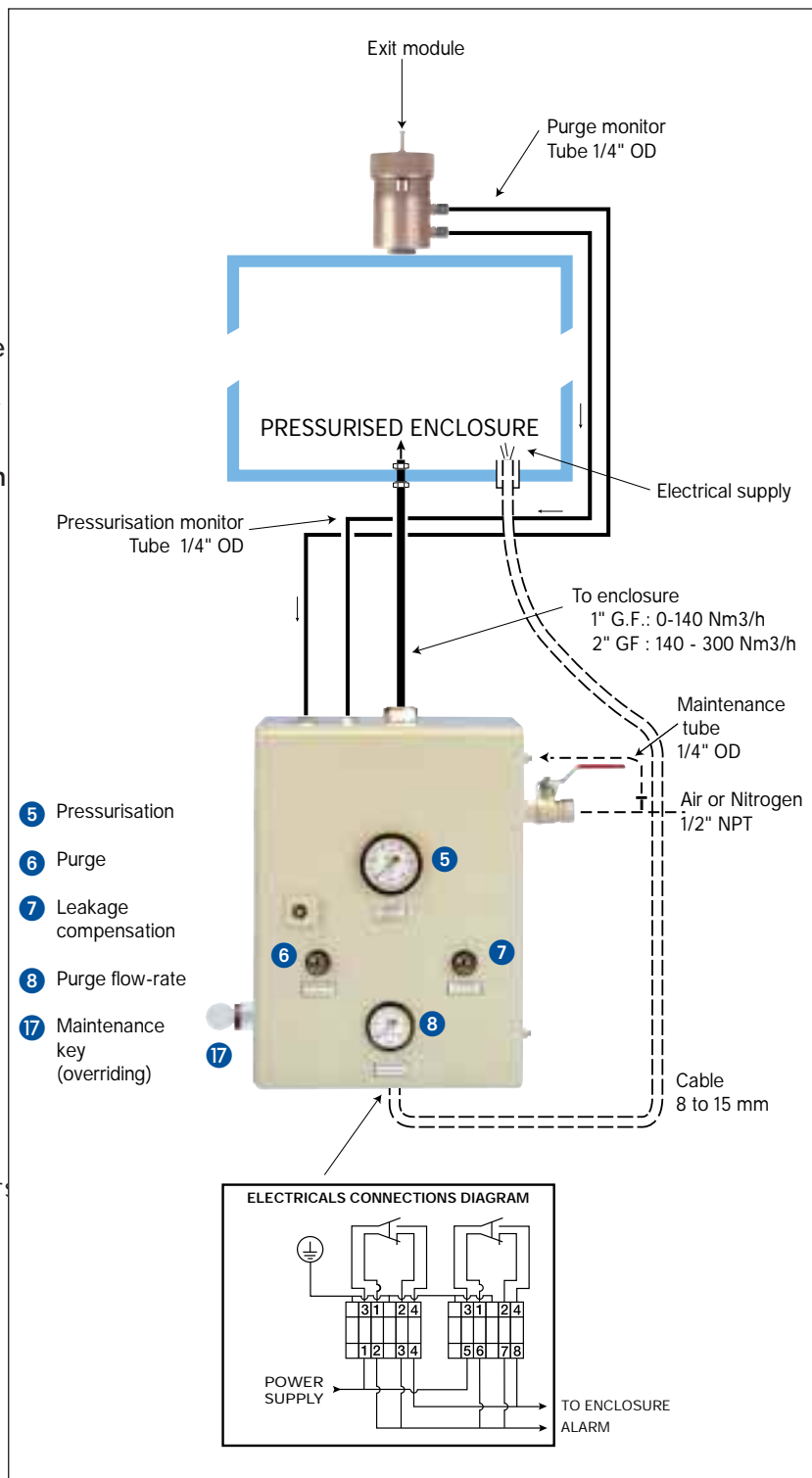
2-Production of purged equipment series on customer behalf when he cannot justify of ATEX company quality system for labelling with CE mark his products .

Our brochure "ATEX applications" gives some exemples of products developed for customer such as :

- Electrical motors with air-air or air-water cooling .
- Gas or liquid analysers
- Computer workstations
- Air conditioning and chillers
- Electrical or instrument cabinets
- Printers

Note :

For the large enclosure volumes such as the motors the purge flow-rate of LCS can be adjusted up to 300Nm³/h or more .



2-High Purge Capability

The LCS Monitor is capable of delivering purging flow rates up to 300 Nm³/h and therefore is ideally suitable for purging and pressurising both large and small enclosures with varying volumes, regardless of leakage rates.

3- Purge and Pressurisation Flow Control

The LCS Monitor as standard comes complete with the following components : Main Air Isolation valve. Pressure regulator to set up the purge flow/pressurisation gauge indicators, and an automatic leakage compensation valve. This valve automatically compensates for any flow or pressurisation variation losses due to the purged enclosure seals aging or to temperature variations which may in turn cause excess purge leakage.

No other external pneumatic components are required .E. Isolation valve- Pressure regulator etc...

4- Fully Integrated System

The LCS Monitor as standard is provided in an Increased Safety Enclosure complete with two contacts for customer power isolation, two contacts for external alarms, cable glands, and manual key operated override switch. The latter allows you to bypass the LCS Monitor and apply power directly to your equipment when the area is known to be non-hazardous.

No other external electrical components are required i.e. terminal boxes or EExi barriers etc.

5- Purging Enclosure In Series

Our certificate allows for a number of cabinets to be purged in series, controlled by one LCS Monitor. The medium enters the first enclosure and must exit the last purge enclosure via the exit module. The exit must always be mounted on the last purged cabinet, as this incorporates the minimum pressures and flow sensing devices. Power isolation must be controlled by the LCS 100 Monitor for all the purged enclosures.

6-Certification Service

A full certification service is also available, for further details on this service or any other technical advice, please contact our office. Typical applications would be Computers, Computer workstations, Motors, Analysers etc.

III LCS MONITOR FEATURES

The LCS Monitor is a Fully Automatic Pneumatic Purge Control Unit with Automatic Leakage Compensation, giving greater flexibility on installation. It can be installed directly on, or beside, the purged enclosure within minutes. Also includes a fully calibrated Exit Unit. Within the Exit Unit design we have incorporated a spark arrestor and relief valve, which will ensure that the enclosure pressure can never exceed the maximum specified, even under "One Fault Condition".

IV OPERATION

3 Types of Purging System are available;
all are Fully Automatic Systems

1- Pressurisation with Leakage Compensation : LCS-p

A quantity of protective gas is passed through the

pressurised enclosure or duct, initially at a high flow rate, to ensure that any explosive atmosphere which could be present within the pressurised enclosure is reduced to a safe concentration when using air as the purging source. After the initial purging has been completed the Exit Module closes and the system will then automatically compensates for any leakage within the pressurised system.

2- Pressurisation with Continuous Flow : LCS-d

This technique uses the same flow rate during and after initial purging. The protective gas is passed through the pressurised enclosure or duct, to ensure that any explosive atmosphere which could be present within the pressurised enclosure is reduced to a safe condition.

The flow rate is maintained to a sufficient level to maintain the minimum internal overpressure of the enclosures and to achieve the correct dilution in the event of internal leakage within the enclosure.

3- Pressurisation using Inert Gas : LCS-i

The techniques employed are exactly the same as 1 & 2 instead of using air as the purging media, inert gas (N₂, CO₂, Ar,He) can be used.

V - SPECIFICATIONS

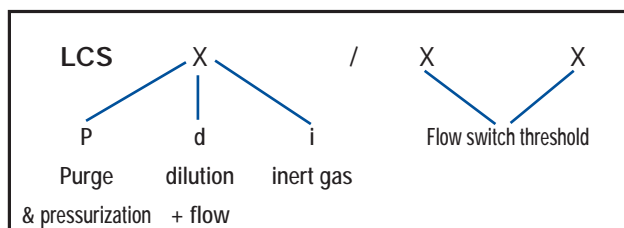
- Flow switch threshold - maximum leakage authorised :

Enclosure volume <i>dm³</i>	ORIFICE <i>mm</i>	Flow switch threshold <i>m³/h</i>	Maximum leakage authorized * <i>m³/h</i>	Purge time <i>mn</i>
≤ 80	2.5	8	11,5	3
80 to 200	3.5	8	22	8
200 to 600	5	18	42	10
600 to 1000	5	18	42	17
1000 to 1600	5	18	42	27
1600 to 2500	5.5	30	50	25
2500 to 4000	6	40	55	30

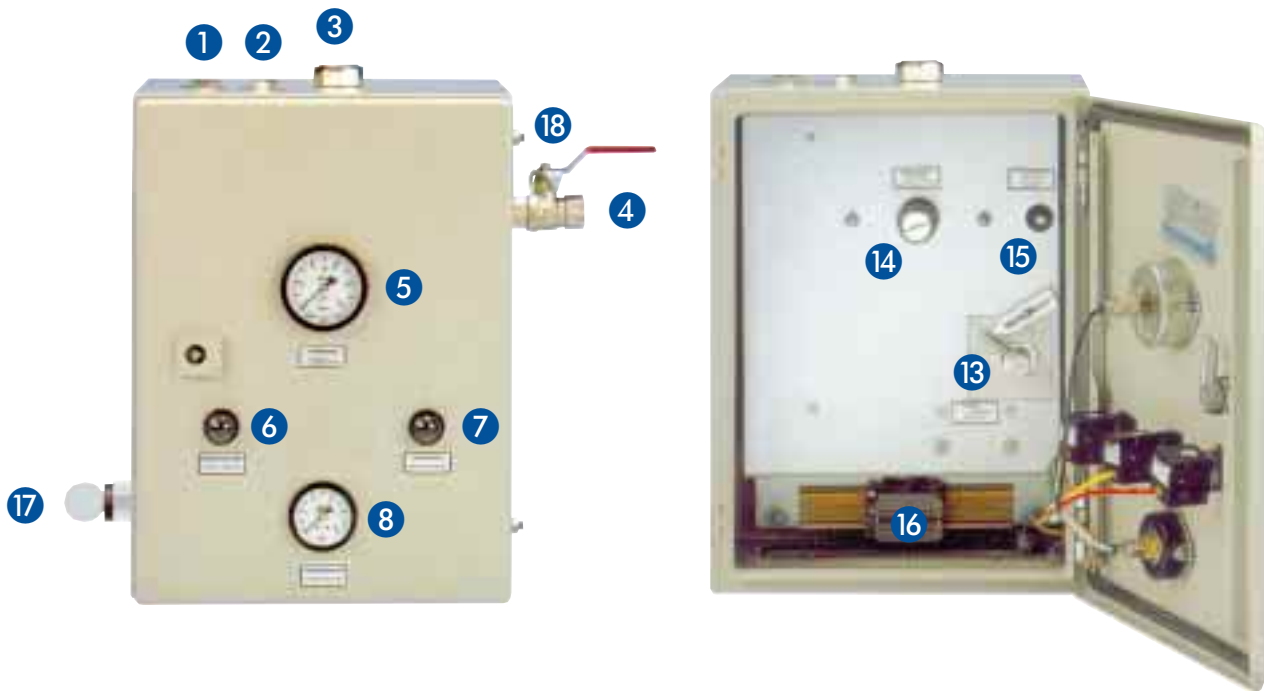
*For a pressure of 4 barg at indicator 8

- gas protection supply : 3 to 8 bars,
- purge flow rate : up to 100 Nm³/ h
- pressurisation : 3 mb,
- electrical control switch : maximum 6 A under 250 V ,
- box in steel beige painted sized : 300 (L) x 400 (H) x 210 (P) mm.,
- protection code : IP 669,
- gland plate on bottom,
- isolating valve on air supply,
- installation details : see page 1 for connections.

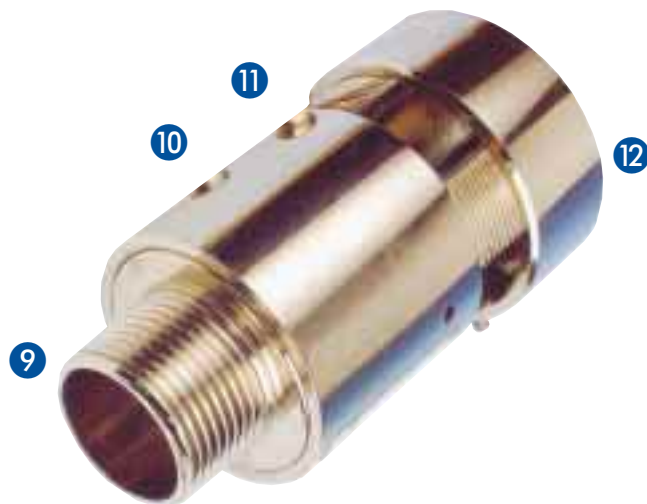
IV - PART NUMBER



VI - MONITOR



VII - EXIT MODULE



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| <ul style="list-style-type: none"> ① Purge monitor inlet :
connection : 1/8" NPTF ② Pressurisation monitor inlet :
connection : 1/8" NPTF ③ To enclosure :
connection : 1" Gas : 0- 140 Nm³/h
2" Gas : 140- 300 Nm³/h ④ Air or Nitrogen supply :1/2" NPTF ⑤ PI 0-30 mb for pressurisation ⑥ Red indicator "Purge in progress" ⑦ Green indicator "Enclosure safe" ⑧ Purge flow indicator ⑨ Connector to enclosure vent : 1" Hole | <ul style="list-style-type: none"> ⑩ Pressurisation monitor
connection : 1/8" NPTF ⑪ Purge monitor
connection : 1/8" NPTF ⑫ Bonnet calibrated to the flow switch threshold
required ⑬ Adjustable timer ⑭ Leakage compensation setting ⑮ Purge flow setting ⑯ Terminal EEx e IIc T6 ⑰ Maintenance key (overriding) ⑱ Maintenance Air Supply
Connection : 1/4" NPTF |
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I-FUNCTION

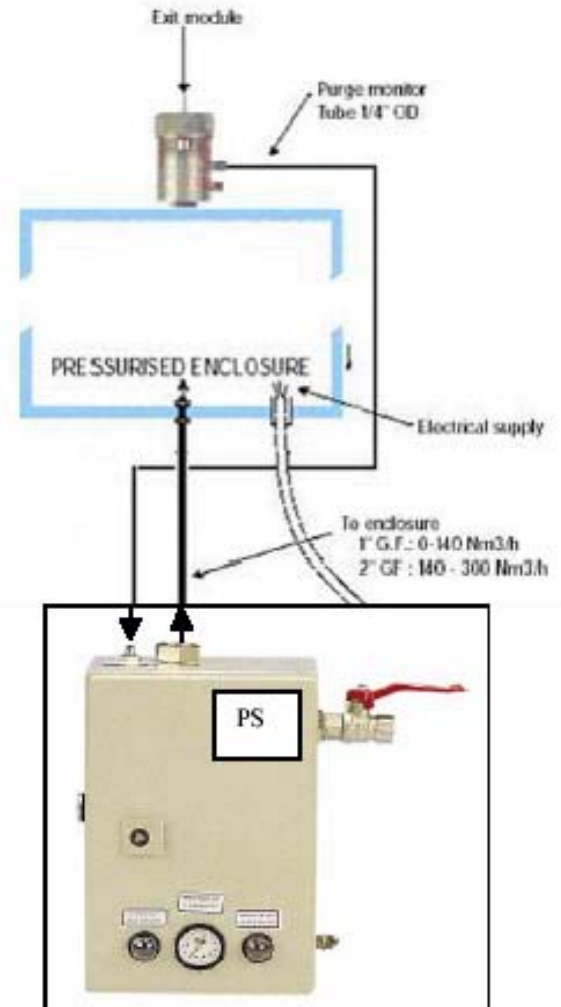
The PS Purge Monitor is a device for preventing the formation of a potentially explosive atmosphere inside a housing by purging with a protective gas before electrical switching on. This device complies to the non sparking equipment protective latest standards, mainly to the standard EN-IEC-679-15(2003) for the Group II 3G under the code EEx nCA(nZ) IIC T6 and has been certified by KEMA under the N° 04ATEX 2076X.

II- OPERATION

When the door of the electrical enclosure is closed a flow of protective gas is introduced to purge a potentially explosive mixture. For this operation the protective gas introduced through the enclosure must represent at least 5 times the internal free volume. This function is controlled by an automatic timer and the flow-rate can be set up to 300 Nm³/h.

At the end of this phase the indicator «enclosure ready» turns green and the monitor electrical output contact is switched on.

This position is memorised until a new purging cycle is recycled by the operator.

**III- ANCILLARIES**

The protective gas supply can be switched on locally by opening isolation valve or remotely by EExd solenoid valve (version tele-arming). The equipment electrical switch-on can be achieved manually by the operator when the «enclosure ready» information turns green or by the monitor electrical output contact interfaced by a relay if the current exceeds 6A under 250V.

IV-SPECIFICATIONS

Material integrated in painted box – size : 300x300x210 or 500x 300x600 mm (LxHxD) depending of maximum flow-rate required .

Please refer to the LCS Monitor for the other specifications .